

IN THE CLAIMS

Please amend the claims as follows:

- 1-2. (Canceled)
3. (Currently Amended) The loss-of-signal detector of claim[[2]] 10 wherein the predetermined delay ΔT is substantially equal to about $\frac{1}{4}$ of the recovered clock signal period T.
4. (Currently Amended) ~~In a receiver that includes a clock recovery circuit for extracting a recovered clock signal from an incoming data signal, a loss of signal detector comprising:~~
a delay circuit coupled to receive the incoming data signal and configured to shift phase of the incoming data signal by a predetermined delay ΔT to generate a delayed data signal;
a flip-flop coupled to receive the recovered clock signal at one input and the delayed data signal at a second input;
an integrator coupled to an output of the flip-flop;
a switch coupled to the integrator and configured to rest the integrator; and
a comparator having a first input coupled to an output of the integrator and a second input coupled to a threshold voltage;
wherein, the delay circuit is configured to shift the phase of the incoming data signal in a manner that is symmetrical with respect to a sampling edge of the clock signal;
The loss-of-signal detector of claim 10 where wherein the delay circuit comprises a
buffer implemented in current-controlled complementary metal-oxide-semiconductor (C³MOS) logic.
5. (Original) The loss-of-signal detector of claim 4 wherein the flip-flop is implemented in C³MOS logic.
6. (Canceled)

7. (Currently Amended) The loss-of signal detector of claim[[6]] 10 wherein the integrator comprises:

- a current source configured to supply I_0 ;
- a capacitor; and
- a first switch coupled between the current source and the capacitor, and configured to open or close in response to the error signal generated by the flip-flop.

8. (Original) The loss-of-signal detector of claim 7 wherein the integrator further comprises a second switch coupled in parallel to the capacitor and configured to discharge the capacitor in response at the end of each integration period τ_{int} .

9. (Canceled)

10. (Previously Presented) In a receiver that includes a clock recovery circuit for extracting a recovered clock signal from an incoming data signal, a loss-of-signal detector comprising:

- a delay circuit coupled to receive the incoming data signal and configured to shift a phase of the incoming data signal by a predetermined delay ΔT to generate a delayed data signal;

- a flip-flop coupled to receive the recovered clock signal at one input and the delayed data signal at a second input;

- an integrator coupled to an output of the flip-flop, wherein the integrator is configured to integrate a plurality of error signals generated by the flip-flop for an integration period, τ_{int} , and to generate a bit error rate sign, V_{BER} ;

- a switch coupled to the integrator and configured to reset the integrator; and

- a comparator having a first input coupled to an output of the integrator and a second input coupled to a threshold voltage, wherein the comparator is configured to compare V_{BER} to a threshold level and to generate a loss-of-signal indicator when V_{BER} exceeds the threshold level,

- wherein, the delay circuit is configured to shift the phase of the incoming data signal in a manner that is symmetrical with respect to a sampling edge of the clock signal;

- wherein the flip-flop is configured to generate an error signal when a transition of the delayed data signal falls outside the range $(T/2) \pm \Delta T$, where T is the period of the recovered clock signal,

and wherein the comparator comprises a hysteresis whereby the loss-of-signal indicator is asserted when V_{BER} exceeds a first threshold V_{t1} , and is not cleared until V_{BER} drops below a second threshold V_{t2} that is lower than the first threshold V_{t1} .

11. (Original) The loss-of-signal detector of claim 7 wherein the first switch of the integrator comprises a pair of differentially coupled metal-oxide-semiconductor field effect transistors (MOSFETs).

12. (Original) The loss-of-signal detector of claim 11 wherein the pair of MOSFET are a p-channel type.

13. (Original) The loss-of-signal detector of claim 11 wherein the integrator further comprises a unity-gain buffer coupled between the pair of differentially coupled MOSFETS.

14. (Previously Presented) In a receiver that includes a clock recovery circuit for extracting a recovered clock signal from an incoming data signal, a loss-of-signal detector comprising:

a delay circuit coupled to receive the incoming data signal and configured to shift a phase of the incoming data signal by a predetermined delay ΔT to generate a delayed data signal;

a flip-flop coupled to receive the recovered clock signal at one input and the delayed data signal at a second input;

an integrator coupled to an output of the flip-flop, wherein the integrator includes:

a current source;

a capacitor configured to be charged by the current source; and

a first switch coupled between the current source and the capacitor, and

configured to open or close in response to the error signal generated by the flip-flop.

a second switch coupled in parallel to the capacitor and configured to discharge the capacitor in response at the end of each integration period τ_{int} ,

and wherein the integrator is configured to integrate a plurality of error signals generated by the flip-flop for an integration period, τ_{int} , and to generate a bit error rate sign, V_{BER} ;

a divider circuit coupled to receive the recovered clock signal and configured to generate a signal representing the integration period τ_{int} ;

a switch coupled to the integrator and configured to reset the integrator; and

a comparator having a first input coupled to an output of the integrator and a second input coupled to a threshold voltage,

wherein, the delay circuit is configured to shift the phase of the incoming data signal in a manner that is symmetrical with respect to a sampling edge of the clock signal;

wherein the flip-flop is configured to generate an error signal when a transition of the delayed data signal falls outside the range $(T/2) \pm \Delta T$, where T is the period of the recovered clock signal.

15-21. (Canceled)